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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/961,024	09/21/2001	Brian R. Mears	884.481US1	5127

21186 7590 01/12/2006

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EXAMINER	
PATEL, NIMESH G	

ART UNIT	PAPER NUMBER
2112	

DATE MAILED: 01/12/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/961,024	MEARS ET AL.	
	Examiner	Art Unit	
	Nimesh G. Patel	2112	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *31 October 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-14,16-18,28-31,33-44 and 49* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-14,16-18,28-31,33-44 and 49* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *12 September 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 1-14, 16-18, 28-31, 33-34, 36-44 and 49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Baker, in view of Earnest('338).

4. Regarding claim 1, Baker discloses a communications interface, comprising: a bus interface(Figure 2, 104) coupleable to an internal bus, a plurality of transmit channels coupled to the bus interface(DMA channels); a transmit control block coupled to the plurality of transmit channels(Figure 2, 78 and 90 combined); a plurality of outbound links coupled to a plurality of outputs of the transmit control block(Figure 1, 16); a plurality of receive channels coupled to the bus interface(DMA channels); and a receive control block(Figure 2, 78 and 90 combined) coupled to the plurality of receive channels;

and a plurality of inbound links coupled to a plurality of inputs of the receive control block(Figure 1, 16), the inbound links and the outbound links to couple the bus interface to a further bus interface(Figure 1, 18) and a start message channel coupled to the receive control block and adapted to send a start message to the source when the receive FIFO reaches a start threshold value(Column 19, Lines 7-15).

Baker does not specifically disclose a stop message channel coupled to the receive control block and adapted to send a stop message to a source when a receive FIFO reaches a stop threshold value. However, Earnest discloses a stop message channel coupled to the receive control block and adapted to send a stop message to a source when a receive FIFO reaches a stop threshold value(Column 11, Lines 40-45). Therefore, it would have been obvious to include the stop message channel, as disclosed by Earnest, in the system of Baker, since this would prevent the writing of data in FIFO that has no more room for data.

5. Regarding claim 2, Baker discloses a communications interface, further comprising a direct memory access controller(Figure 2, 72) coupled to the bus interface.

6. Regarding claim 3, Baker discloses a communications interface, wherein the bus interface comprises a plurality of transmit control registers and a plurality of receive control registers(Figure 2, 88).

7. Regarding claim 4, Baker discloses a communications interface, wherein the plurality of transmit control registers comprises a transmit first in first out (FIFO) register associated with each transmit channel(Figure 2, 82, 84) and a channel status register associated with each transmit channel(Figure 2, 88).

8. Regarding claim 5, Baker discloses a communications interface, wherein the plurality of receive control registers comprises a receive FIFO register coupled to each receive channel(Figure 2, 80) and a channel status register associated with each receive channel(Figure 2, 88).

9. Regarding claim 6, Baker discloses a communications interface, wherein each of the plurality of transmit channels and each of the plurality of receive channels comprises a first in first out (FIFO) memory device(Figure 2, 80, 82, 84).

10. Baker does not specifically disclose a power management unit coupled to each of the plurality of transmit channels and receive channels. However, Official Notice is being taken that advantages of power management are well known in the art and it would have been obvious to include a power management unit in the system of Baker since this would allow power to be saved during periods of inactivity(The common knowledge or well-known in the art statement is taken to be admitted prior art because applicant either failed to traverse the examiner's assertion of official notice (see MPEP 2144.03 (C))).

11. Regarding claim 8, Baker discloses a communications interface, wherein the transmit control block comprises a channel arbiter adapted to select a next one of the plurality of transmit channels to be activated(Figure 12, 340).

12. Regarding claim 9, Baker discloses a communications interface, wherein the transmit control block comprises a link controller adapted to transmit data from a selected transmit channel across a selected link.(Figure 2, 90).

13. Regarding claim 10, Baker discloses a communications interface, wherein the receive control block comprises a state machine adapted to store a current active channel number, a number of bits in a current byte being transferred and to write each byte to a

selected one of the plurality of receive channels(Figure 12, 352; Column 13, Lines 12-14).

14. Regarding claim 11, Baker discloses a communications interface, wherein the plurality of transmit channels comprises: at least one channel adapted to send a clock signal(Figure 26b, clkA); at least one channel adapted to send a strobe signal(Figure 12, 356); at least one channel adapted to send a wait signal(Column 26, Lines 40-41); and at least one channel adapted to send data(Column 26, Lines 66-67).

15. Regarding claim 12, Baker discloses a communications interface, wherein the plurality of receive channels comprises: at least one channel adapted to send a clock signal(Figure 26b, clkB); at least one channel adapted to send a strobe signal(Figure 12, 356); at least one channel adapted to send a wait signal(Column 25, Lines 20-23); and at least one channel adapted to send data(Column 25, Lines 28-29).

16. Regarding claim 13, Baker discloses a communications interface, wherein at least one of the plurality of transmit channels and the plurality of receive channels comprise a virtual general purpose input/output channel(Column 7, Lines 42-43).

17. Regarding claim 14, Baker discloses a communications interface, further comprising: a start threshold register adapted to set a start threshold value to cause a start message to be sent to a source when the receive FIFO can receive additional data(Column 19, Lines 7-15) and Earnest discloses a stop threshold register adapted to set a threshold value to cause a stop message to be sent to a source when a receive FIFO is full(Column 11, Lines 40-45).

18. Regarding claim 16, Baker does discloses at least one of a direct flow control mode and a message flow control to control a flow of data across the communications interface(Column 19, Lines 7-15).

19. Regarding claim 17, Baker discloses a communications interface, wherein the transmit control block comprises: a multiplexer coupled to the plurality of transmit channels; a parallel in serial out converter (PISO)(Column 6 Lines 20-22) coupled to the multiplexer; and a control circuit coupled to the multiplexer and the PISO and adapted to select one of the plurality of transmit channels to transmit data(Fig 12, 344).

20. Regarding claim 18, Baker discloses a communications interface, wherein the receive control block comprises: a demultiplexer coupled to the plurality of receive channels; a serial in parallel out converter (SIPO)(Column 6 Lines 20-22); and a control circuit coupled to the demultiplexer and adapted to select one of the plurality of receive channels to receive data((Fig 12, 344).

21. Regarding claim 28, Baker discloses a method of transmitting data between semiconductor chips, comprising writing data into at least one of a plurality of transmit FIFOs(Figure 2, 82, 84); selecting one of the plurality of transmit FIFOs that contains data to be transmitted and that is not in a wait state(Column 14, Lines 20-28; Column 18, Lines 58-60) and sending a start message when the corresponding one of the receive FIFOs can receive data(Column 19, Lines 7-15).

Baker does not disclose and transmitting the data to a corresponding one of the plurality of receive FIFOs that has not exceeded a threshold value and sending a stop message if the corresponding one of the receive FIFOs cannot receive data. However, Earnest discloses and transmitting the data to a corresponding one of the plurality of

receive FIFOs that has not exceeded a threshold value and sending a stop message if the corresponding one of the receive FIFOs cannot receive data(Column 11, Lines 40-45). Therefore, it would have been obvious the teachings of Earnest, with that of Baker, since this would prevent the writing of data in FIFO that has no more room for data.

22. Regarding claim 29, Baker discloses a method, further comprising: sending a wait signal to a transmit control block if the corresponding one of the receive FIFOs cannot receive data; and removing the wait signal when the corresponding one of the receive FIFOs can receive data(Column 26, Lines 40-41).

23. Regarding claim 30, Baker discloses a method, further comprising selecting another one of the plurality of transmit FIFOs to send data to another corresponding one of the plurality of receive FIFOs while the corresponding one of the receive FIFOs cannot receive data(Column 14, Lines 20-28).

24. Regarding claim 31, Baker discloses a method, further comprising: sending a strobe signal to initiate a transmission of data(Figure 12, 356); sending a selected channel number over which the data is to be transmitted(Column 14, Lines 20-28); and sending an end of message signal after the data has been transmitted(Column 25, Lines 62-64).

25. Regarding claim 33, Baker discloses a method, further comprising: selecting one of the plurality of transmit FIFOs and the corresponding one of the plurality of receive FIFOs by a predetermined algorithm(Figure 13).

26. Regarding claim 34, Baker does not disclose the predetermined algorithm is round-robin. However, the round-robin algorithm is a well-known arbitration scheme and therefore could be substituted for the arbitration scheme in Baker's system.

27. Regarding claim 36, Baker discloses a method of forming a communications interface, comprising: forming a bus interface(Figure 2, 104), forming a plurality of transmit channels coupled to the bus interface(DMA channels); forming a transmit control block coupled to the plurality of transmit channels(Figure 2, 78 and 90 combined); forming a plurality of outbound links coupled to a plurality of outputs of the transmit control block(Figure 1, 16); forming a plurality of receive channels coupled to the bus interface(DMA channels); forming a receive control block(Figure 2, 78 and 90 combined) coupled to the plurality of receive channels; forming a plurality of inbound links coupled to a plurality of inputs of the receive control block(Figure 1, 16), the inbound links and the outbound links to couple the bus interface to a further bus interface(Figure 1, 18) and forming a start message channel coupled to the receive control block and adapted to send a start message to the source when the receive FIFO reaches a start threshold value(Column 19, Lines 7-15).

Baker does not specifically disclose forming a stop message channel coupled to the receive control block and adapted to send a stop message to a source when a receive FIFO reaches a stop threshold value. However, Earnest discloses forming a stop message channel coupled to the receive control block and adapted to send a stop message to a source when a receive FIFO reaches a stop threshold value(Column 11, Lines 40-45). Therefore, it would have been obvious to include the stop message channel, as disclosed by Earnest, in the system of Baker, since this would prevent the writing of data in FIFO that has no more room for data.

28. Regarding claim 37, Baker discloses a method, wherein forming the bus interface comprises forming a plurality of transmit control registers and a plurality of receive control registers((Figure 2, 88).

29. Regarding claim 38, Baker discloses a method, wherein forming the transmit control block comprises: forming a channel arbiter adapted to determine a next one of the plurality of channels to be activated(Figure 12, 340); and forming a link controller adapted to transmit data from a selected transmit channel across a selected link(Figure 2, 90).

30. Regarding claim 39, Baker discloses a method, wherein forming the receive control block comprises forming a state machine adapted to store a currently active channel number, a number of bits in a current byte being transferred and to write each byte to a selected one of the plurality of receive channels(Figure 12, 352; Column 13, Lines 12-14).

31. Regarding claim 40, Baker discloses a method, wherein forming the plurality of transmit channels and forming the plurality of receive channels, each comprises: forming at least one channel adapted to send a clock signal(Figure 26b, clkA, clkB); forming at least one channel adapted to send a strobe signal(Column 12, 356); forming at least one channel adapted to send a wait signal(Column 26, Lines 40-41; Column 25, Lines 20-23); and forming at least one channel adapted to send data(Column 25, Lines 28-29; Column 26, Lines 66-67).

32. Regarding claim 41, Baker discloses a method, further comprising forming at least one virtual general purpose input/output channel(Column 7, Lines 42-43).

33. Regarding claim 42, Baker discloses a method, wherein forming the transmit control block comprises: forming a multiplexer coupled to the plurality of transmit channels; forming a parallel in serial out converter (PISO)(Column 6, Lines 20-22) coupled to the multiplexer; and forming a control circuit coupled to the multiplexer and to the PISO(Figure 12, 344).

34. Regarding claim 43, Baker discloses a method, wherein forming the receipt control block comprises: forming a demultiplexer coupled to the plurality of receive channels; forming a serial in parallel out converter (SIPO)(Column 6; Lines 20-22); forming a control circuit coupled to the demultiplexer and adapted to select one of the plurality of receive channels to receive data(Figure 12, 344).

35. Regarding claim 44, Baker discloses a method comprising: supplying a clock signal from a first terminal; supplying a strobe signal from a second terminal; providing an identification value corresponding to a selected channel register from data terminals when the strobe signal is active; providing data from the selected channel register at the data terminals when the strobe signal is inactive, the data changing in accordance with the clock signal; and providing a third terminal that receives a wait signal that keeps the data provided at the data terminals from changing(Figure 12, Column 17, Lines 34-50) and providing a start message channel coupled to the receive control block and adapted to send a start message to the source when the receive FIFO reaches a start threshold value(Column 19, Lines 7-15).

Baker does not specifically disclose providing a stop message channel coupled to the receive control block and adapted to send a stop message to a source when a receive FIFO reaches a stop threshold value. However, Earnest discloses providing a stop

message channel coupled to the receive control block and adapted to send a stop message to a source when a receive FIFO reaches a stop threshold value(Column 11, Lines 40-45). Therefore, it would have been obvious to include the stop message channel, as disclosed by Earnest, in the system of Baker, since this would prevent the writing of data in FIFO that has no more room for data.

36. Regarding claim 49, Baker discloses a communications interface, further comprising: a channel start threshold register to store the start threshold value to cause a start message to be sent to a source when the receive FIFO can receive additional data(Column 19, Lines 7-15) and Earnest discloses a stop threshold register adapted to set a threshold value to cause a stop message to be sent to a source when a receive FIFO is full(Column 11, Lines 40-45).

37. Claim 35 is rejected under 35 U.S.C. 103(a) as being unpatentable over Baker, in view of Earnest, and in further view of Holm.

Baker and Earnest does not disclose a method, further comprising selecting an interface width from one of a serial width, a two-bit width and a nibble width. However, Holm discloses width of the data bus being any size(Column 8, Lines 31-32). Therefore it would have been obvious to use the teachings of Holm in the system of Baker and Earnest, to use a bus with varying width since this would increase compatibility.

Response to Arguments

38. Applicant's arguments filed October 31, 2005 have been fully considered but they are not persuasive.

39. In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves **or in the knowledge generally available to one of ordinary skill in the art**(emphasis added). See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988)and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, it would have been obvious to include the stop message channel, as disclosed by Earnest, in the system of Baker, since this would prevent the writing of data in FIFO that has no more room for additional data., which is knowledge generally available to one of ordinary skill in the art.

40. In response to applicant's argument that the office action has not shown that the buffer of Earnest is compliant with IEEE1394, the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981).

41. Applicant further argues that an affidavit or declaration must be provided when using official notice. However, office notice was taken in the previous final rejection mailed on November 5, 2004. The common knowledge or well-known in the art statement is taken to be admitted prior art because applicant failed to traverse the

examiner's assertion of official notice in the response to the final office action filed on March 10, 2005(see MPEP 2144.03 (C)). Therefore this argument is not persuasive.

Conclusion

42. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nimesh G. Patel whose telephone number is 571-272-3640. The examiner can normally be reached on M-F, 8:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rehana Perveen can be reached on 571-272-3676. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Nimesh G Patel
Examiner
Art Unit 2112

NP
January 8, 2006

REHANA PERVEEN
SUPERVISORY PATENT EXAMINER
1/9/2006